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Building Competitive Advantage in Early Stage Start-Ups: The Role of Entrepreneurial Capabilities

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BUILDING COMPETITIVE ADVANTAGE IN EARLY STAGE START-UPS: THE ROLE OF ENTREPRENEURIAL CAPABILITIES

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ABSTRACT

Recent theoretical work has suggested "entrepreneurial capabilities" themselves may provide the resource foundations to deliver competitive advantage for entrepreneurial firms. This paper empirically examines how start-ups use such entrepreneurial capabilities to build competitive advantage. We investigate the effects of technological and marketing expertise, knowledge of market trends, flexibility and networking on the ability to obtain a cost leadership or differentiation advantage.

Using a large dataset of 1,108 start-ups obtained after random sampling of over 30,193 households, we find that differentiation strategies benefit from most resource advantages. Cost leadership strategies, however, seem only to benefit from technological expertise and flexibility and not related to market-based advantages. By doing so, this study contributes to both entrepreneurship and RBV-theories by showing how entrepreneurial capabilities lead to competitive advantages in nascent and early-stage start-ups.

INTRODUCTION

The Resource-Based View (RBV) of the firm has become a dominant theoretical base for strategic management (Peteraf, 1993; Barney, 2001) and explaining how firms can attain sustained competitive advantage (Wernerfelt, 1984; Barney, 1991). RBV research suggests that firms possessing resources that are valuable, rare, inimitable, and the organisational ability to exploit (VRIO) are able to obtain a sustained competitive advantage (Barney, 1991; 1995).

Following observations that the RBV has the potential to contribute within the domain of entrepreneurship (Conner, 1991), entrepreneurship research has shown increasing interest in the RBV. Several empirical studies have used entrepreneurial contexts as a research setting for examining RBV theory (e.g. Chandler and Hanks, 1994; Edelman, Brush and Manolova, 2005), Recent theoretical contributions have discussed ways that RBV can be elaborated as a lens to examine entrepreneurial actions (Alvarez and Busenitz, 2001; Alvarez and Barney, 2004). Alvarez and Busenitz (2001) argue that the core entrepreneurial actions – opportunity recognition and the assembly of resources to exploit those opportunities – provide a useful RBV basis for examining the domain of entrepreneurship. That is, "entrepreneurial capabilities" themselves may provide firms VRIO-resources as the foundation for competitive advantage. To date, these ideas have received little empirical attention. One notable exception is Wiklund and Shepherd (2001) who studied the role of entrepreneurial orientation and market and technical knowledge on the performance of high technology start-ups. None-the-less, more work is required to both test a broader range of entrepreneurial capabilities, and also elaborate these ideas within other entrepreneurial settings – particularly less technologically sophisticated firms which dominate a random population of start-ups.

The overall aim of this study is to develop and test a model of entrepreneurial capabilities and competitive advantages in entrepreneurial start-ups. Building on the theoretical ideas of Alvarez and Busenitz (2001) we investigate whether "entrepreneurial capabilities" provide a suitable RBV lens to investigate competitive advantage for a broad range of nascent and young firms. We consider several dimensions of entrepreneurial capabilities identified in earlier work including alertness and industry knowledge (Kirzner, 1973), flexibility (Ebben & Johnson, 2005), strong networks (Lee, Lee and Pennings, 2001) and unique marketing and technical expertise (Wiklund and Shepherd, 2003). Using a large sample of 1,108 nascent and young (< 3 years) firms, we investigate whether the entrepreneurial capability advantages of start-ups influences the extent to which they obtain a cost and/or product differentiation advantage.

Our "entrepreneurial capabilities" based model extends existing RBV theory in several ways. The model incorporates a broad range of "entrepreneurial capabilities" including technical expertise, marketing expertise, market knowledge, flexibility and networking. It also examines the impact of resource advantages on product differentiation and cost advantage separately (Porter, 1980; Grant, 1991). We also investigate the impact of the inimitability of a firm's key advantage and disadvantage.

The model is tested in a unique empirical setting that extends the scope for which RBV has been examined. The study is the first to include nascent firms in an empirical examination of RBV. Moreover, a large representative sample of start-up efforts was identified through a phone survey of a random sample of over 30,000 households. As such, the study doesn't suffer from survival bias that would mask or reduced the impact of factors that lead to early termination of the start-up effort (Davidsson, 2008).

The paper proceeds as follows. The next section discusses the backgrounds of the resource-based view and its application in entrepreneurial contexts, followed by our hypotheses development. Subsequently we discuss our sample and methods, followed by our results. Finally, we discuss the implications of our findings for research and practice.

BACKGROUND

Foundations of the RBV

The resource-based view (RBV) of the firm represents one of the dominant tradition in the field of strategic management (Peteraf 1993; Barney 2001). Resource-based thinking can arguably be traced back to Penrose (1959). In her work examining the growth of firms, she highlighted the importance of firm resources and heterogeneity. More contemporary work (Wernerfelt 1984; Barney 1991) has focussed on the role of firm resources as sources of competitive advantage, and the sustainability of those advantages. Although several authors make a distinction between related concepts such as competencies (Prahalad and Hamel, 1990) and capabilties (Stalk, 1992) and resources (Wernerfelt, 1984), for the purposes of explaining firm heterogeneity we follow Barney (1996) and treat resources, competencies and capabilities as all contributing to the strategic position of the firm. Importantly, the research focuses on the characteristics of a firm's resources that lead to sustained competitive advantages. This research tradition is encapsulated in the now well know VRIN framework (Barney, 1991), later updated to VRIO (Barney 1995; Barney 2001):

- Value: Is the resource bundle valuable to the firm for exploiting opportunities in the market?

- Rare: Are the resources rare among competing firms?
- Inimitable: Are the resources hard (or expensive) for other firms to duplicate or substitute with other resources?
- Organisation: Is the firm able to exploit the potential of these resources and appropriate economic rents from the market opportunities?

The RBV and Entrepreneurship

Although the earliest heritage of the RBV can be associated with the field of entrepreneurship and the work of Penrose (1959), recently the RBV has attracted renewed interest within the domain of entrepreneurship. Some of this work is focussed on applying the concepts of RBV within an entrepreneurial or new firm setting. Important contributions include Chandler and Hanks (1994), Shraeder and Simon (1997) and Westhead, Wright and Ucbasaran (2001), Edelman, Brush and Manolova (2005) and Wiklund and Shepherd (2001). More recently, Arthurs and Buzenitz (2006) have applied the concepts of dynamic capabilities within the empirical domain of entrepreneurship. Other work has been interested in understanding the role of dynamic capabilities in entrepreneurial firms. Zhara, Sapienza and Davidsson (2006) provide a comprehensive review and agenda for research in this area.

Recently a stream of theoretical research has emerged exploring the role of "entrepreneurial capabilities" as a critical resource for the RBV. Alvarez and Barney (2004) put forward an entrepreneurial knowledge-based arguments toward developing a theory of the entrepreneurial firm. They suggest that an entrepreneurial firm is suitable for exploiting opportunities when (i)

another actor does not control the critical resources to exploit an opportunity, and (ii) knowledge of the opportunity is either tacit, or an isolating mechanism exists to protect explicit knowledge.

Alvarez and Busenitz (2001) argue that entrepreneurial capabilities identified in the domain of entrepreneurship provide the basis for an RBV of entrepreneurial firms. Specifically, they focus on the ability to seek and recognise opportunities (i.e. opportunity recognition) and the ability to organise resources to generate heterogeneous outputs (i.e. opportunity exploitation) as central resources of an entrepreneurial firm. Further, they argue that these abilities have the potential to satisfy the VRIO characteristics of a sustainable competitive advantage.

Yet these ideas have been largely untested empirically. One contribution in this direction is Wiklund and Shepherd (2001). They demonstrated that entrepreneurial orientation moderates the impact of market and technical knowledge on the performance of high technology firms. None-the-less, more work is required to test a broader range of entrepreneurial capabilities, and also within other entrepreneurial settings (including less technologically sophisticated settings).

To allow empirical testing of "entrepreneurial capabilities" within an RBV framework, scales for measuring these capabilities are required. Some progress has also been made in this direction. For example, Brown, Davidsson and Wiklund (Brown, Davidsson et al. 2001) develop an operationisation of Stevenson's concepualisatoion of entrepreneurship as opportunity-based firm behaviour. Wiklund and Shepard (2003) develop scales for knowledge-based firm resources such as marketing expertise / customer service and technical expertise. Similarly, Madsen, Alsos, Borch, Ljunggren & Brastad (2006) develop scales to measure network capabilities.

Hypothesis Development

We build on the above RBV theory to develop several hypotheses relating to resource-based advantage of start-up firms.

Competitive advantage can manifest from either cost advantages or product differentiation advantage relative to competitors (Porter, 1980). Entrepreneurial start-up firms will require different resource configurations to successfully achieve costs advantages to those to achieve product differentiation advantages. Hence, in a departure from earlier studies, we examine the resource drivers of each source of competitive advantage separately.

Marketing Expertise. The essence of marketing is understanding customer needs and creating, communicating and delivering products and services that provide value to customers (Kotler and Keller, 2006). Product differentiation has been a centerpiece of marketing since Wendell Smith's (1956) article. Indeed, has lead to the segmentation, targeting, positioning approach widely adopted by marketers. Hence we propose:

H1: Higher marketing expertise advantage will lead to superior product differentiation

Market knowledge. Market knowledge is considering a cornerstone of marketing (Kotler and Keller, 2006). In entrepreneurial contexts, market knowledge allows firms to better recognise and exploit market opportunities (Wiklund and Shepherd, 2003). Specifically, it allows firms to form solutions to customer problems (Shane, 2000). Furthermore, advanced users are often a fertile source of new product ideas (von Hippel, 1986) and the locus of innovation often lies with those users whose tacit knowledge regarding solutions to their problems is difficult to articulate (von Hippel, 2004). Indeed, up-front homework of customer needs has been identified

as one of the key ingredients for successful new product development (Cooper and Kleinschmidt, 1987; 2007). In all, better customer knowledge will help firms develop more differentiated products to meet customer needs. Hence,

H2: Higher market knowledge advantage will lead to superior product differentiation

Technical Knowledge. Technical knowledge can also enhance a firm's ability to discover and exploit market opportunities (Wiklund and Shepherd, 2003). In some instances firms develop breakthrough innovations (technology push) for which the market opportunity was not easily apparent (Abbernathy and Utterback, 1978). Technological knowledge also allows firms to absorb knowledge developed in other fields to further enhance their products (Cohen and Levinthal, 1990). Technological knowledge can also enhance a firm's ability to effectively exploit an opportunity by, for example, determining the product's optimal design to optimize functionality and reliability (Rosenberg, 1994). Thus, technical knowledge improves the economic impact of exploiting the opportunity (McEvily and Chakravarthy, 2002). Thus:

H3a: Higher technical knowledge advantage will lead to superior product differentiation

Technical knowledge also enables a firm to lower its costs. Technical knowledge assists determining a product's optimal design to optimize cost (Rosenberg, 1994). Moreover, many process innovations (Abernathy and Utterback, 1978). Thus:

H3b: Higher technical knowledge advantage will lead to superior a superior cost position

Networking Ability. Social capital theory suggests a firm's external networks are a major source of firm performance (Granovetta, 1985; Uzzi, 1996), particularly in entrepreneurial settings (Aldrich and Zimmer, 1986; Davidsson and Honing, 2003; Lee et al., 2001). External contacts perform the important role to allow firms to mobilise external resources and interact with other firms, since economic transactions are embedded within larger interorganisational networks (Granovetta, 1985; Burt, 1992). Indeed social networks are instrumental in allowing firms to identify entrepreneurial opportunities and potential customers and to test ideas (Aldrich and Zimmer, 1986). Hence,

H4a: Higher networking advantage will lead to superior product differentiation

Alternatively, firms transact with suppliers and other partners to acquire resources that enable them to produce product / services at competitive prices (Uzzi, 1996; Burt, 1992). Hence,

H5b: Higher networking advantage will lead to a superior cost position

Oganisational Flexibility.

From Schumpeter (1934) and onwards, a recurring theme in the literature has been that young, entrepreneurial firms have specific advantages that make them flexible and allows them to bring innovations to the market faster and at lower cost than large, incumbent firms are able to do. This has been discussed under various labels such as 'incumbent inertia' (Lieberman & Montgomery, 1988), 'core rigidities' (Leonard-Barton, 1992), 'liabilities of obsolescence' (Henderson, 1999) and a range of other terms (Mosakowski, 2002; Tushman & Anderson, 1986). Moreover, firms are often constrained from responding to opportunities by external resource dependencies (Pfeffer and Salancik, 1978). Arrow (1983) shows through theoretical analysis

why small organizations – with their simple structures; closeness between market and decision-making power, and speed of implementation – often outperform large organizations in innovative activity as long as development costs are not prohibitive. Empirical results reported by Acs and Audretsch (1990) largely confirm Arrow's observations. Hence, a firm's ability to freely and quickly respond to market opportunities will lead to product/service offerings more closely aligned with customer needs. Thus,

H6a: Higher flexibility advantage will lead to superior product differentiation

Similarly, more flexible firms may be able to respond to opportunities in an efficient and streamlined manner, thereby reducing their costs. Hence,

H6b: Higher flexibility advantage will lead to a superior cost position

Inimitability. We now consider the inimitability (Barney, 1991; 1995) of a firm's sources of advantage. We focus on the firm's single key advantage relative to its competitors. The sustainability of an advantageous resource position requires ex post limits to competition, or the ability to protect the position from subsequent competition (Peteraf 1993). A firm must protect their resource position from both imitation and substitution (Barney, 1991). In this respect Rumelt (1984) identified numerous isolating mechanisms including causal ambiguity, learning, reputation, buyer switching and search costs and economies of scale when specialised assets are required. As such, inimitability enables a firm to continue to gain advantage from advantages built in the past. Hence:

H6a: Greater inimitability of key advantage will lead to superior product differentiation

H6b: Greater inimitability of key advantage will lead to a superior cost position

Similarly, the ability of a firm to overcome their disadvantages will have a positive effect on their ability to exploit resource advantages.

H7a: Firms that can more easily overcome their key disadvantage will tend to have superior product differentiation

H7b: Lower Firms that can more easily overcome their key disadvantage will tend to have a superior cost position

METHODS

Data collection

We conducted a large scale phone survey of 30,193 randomly selected adults with equal male/female representation and a maximum of one adult per household in 2007. This process yielded 1,988 entrepreneurial start-ups. These were directed to the full length interview (40-60 minutes) either directly following the screener or later by appointment. The full length interviews were completed by 1,108 respondents, representing a response rate of 55,7 percent of the eligible cases identified in the screener.

- In order to qualify for inclusion as an entrepreneurial start-up the respondent first had to answer affirmatively to at least one of the following questions:

- Are you, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others?
- Are you, alone or with others, currently trying to start a new business or a new venture for your employer, an effort that is part of your normal work?

- Are you, alone or with others currently the owner of a business you help manage, including self-employment or selling any goods or services to others?

To qualify for inclusion in the study, respondents also had to confirm that they were (or intended to be) owners or part owners of the (emerging) firm. Finally, the preliminary young firm cases were retained if they confirmed that they started "trading in the market doing the type of business you are currently doing" in 2004 or later.

The sample consisted of 594 nascent firms (53.6% of the sample) and 514 young firms (46.4%).

Validation of method and questionnaire

After comprehensive questionnaire development work, a version of the survey instrument was pre-tested on a convenience sample of 71 nascent and young businesses in November-December, 2006. After analysis, re-design, programming and internal testing a full scale pilot test with computer aided telephone interviewing (CATI) using a random digit dialling (RDD) procedure `was commissioned to TNS and undertaken in April-May, 2007. This pilot test included contact with some 1,810 Australian households for a yield of 78 nascent- or young firm founders who also completed the full interview. After further testing and re-design the large scale screening for eligible cases started in early July 2007 and continued into April, 2008.

Sampling bias. A typical problem in entrepreneurship research is that they tend to focus on start-ups that have already successfully progressed through the first phases of the entrepreneurial process, which might result in a biased sample and results (Davidsson, 2008). As such, we took great care in generating a relatively unbiased sample by randomly calling up households.

Considering the small percentage of the adult population that will actually be involved with starting up a new business we used an initial sample of just over 30,000 households.

Scale development and validation

We sought to develop scales for measuring resource advantages (and disadvantages) and their VRIO characteristics for a broad-based cohort of entrepreneurial firms. Where possible scales were based on existing scales. We used multi-item scales to increase the validity of the constructs. The items for the scales are provided in the Appendix. Exploratory and confirmatory factor analyses were conducted to establish unidimensionality of our scales.

The first block of the scales related to the firm's level of resource advantages and disadvantages. Respondents were asked the degree to which each resource category represented an advantage or disadvantage relative to other businesses in their industry on a 5 point response scale: Major Disadvantage, Slight Disadvantage, No Advantage or Disadvantage, Slight Advantage and Major Advantage. Following Wiklund and Shepherd (2003), we measured a firm's relative advantage in *marketing expertise* with a 3-item scale ($\alpha = .80$). *Alertness* ($\alpha = .84$) is a 3-item scale that gauged the extent to which the firm was better able to identify trends in the industry and market than competitors. *Technical expertise* ($\alpha = .70$) was adapted from Wiklund and Shepherd (2003). The three items tapped into the extent to which the start-up had an advantage over competitors in terms of technological expertise, product/ service development and difficult to copy competences. *Network capabilities* ($\alpha = .93$) was measured with 3 items (Madsen et al., 2006). The scale measured to what extent the entrepreneurial start-up was better able to utilize its network for its businesses than competitors. *Flexibility* ($\alpha = .76$) was adapted from "the study Entrepreneurship in Different Organizational Contexts" (JIBS97) conducted at

Jonkoping International Business School (see, Brown et al., 2001; Naldi, 2008) and measured the extent to which managers had the flexibility to make quick decisions and react to trends.

The second block was a new scale that asked the respondent to nominate the most important resource advantage and disadvantage of the firm. For the advantage, they were then asked four questions to determine how easy it would be for other firms to imitate and/or substitute this resource on a 5 point likert scale ($\alpha = 0.70$). For the firm's key disadvantage, they were asked corresponding questions related to overcoming this disadvantage ($\alpha = 0.68$).

The third block measures the competitive advantage of the firm. Following Porter (1985) and Grant (1991) two dimensions, cost advantage and product differentiation were included. The scale for *cost advantage* ($\alpha = .73$) was measured with 4 items adapted from JIBS97. The scale gauged to what extent the start-up was having an advantage relative to competitors regarding labour, overhead, and operating costs. Product / service differentiation ($\alpha = .78$) was measured with 3 items gauging to what extent its product had superior distinctive features relative to competitive offerings.

Because of the large, heterogeneous sample, we included several control variables that could possibly affect the way in which a start-up is run. *Years venture active* measured the age of the venture. The longer the venture is active, the longer it had time to build resource advantages. *Amount invested* measured the dollars the entrepreneur has invested in the venture. The higher the investments made, the more the venture might have dedicated to building resource and competitive advantages . In a similar way, the *hours the owners* put in the venture might also influence the extent to which a venture built resource and competitive advantages. The *number of employees* indicates the size of the venture, and ventures of different sizes might have

different ways of obtaining competitive advantages. We included dummies to control for whether the entrepreneur was acting alone or as a *team*, and on whether the entrepreneur's *spouse* was part of the team. We also controlled for the *number of owners,* as this could influence the access to resources and as such the advantages it would be able to obtain. Further, we added dummies to control for the start-up being a *home business,* whether the start-up was developing a product or *service* (value of 1), and whether it was a *high-tech* start-up. Such start-ups might be run in a different way using different resource combinations. We also added a set of control variables to gauge to entrepreneur's human capital. Entrepreneurs with higher human capital might for example better be able to obtain competitive advantage, maybe even be able to offset the lack of certain resource advantages. Thus we included variables to gauge the entrepreneur's highest *education level, start-up experience,* and *business experience*. Finally, we controlled for the *age of the technology,* and whether the firm was a *nascent.* The older the technology is, the more competition one could expect, which might lead to the search of different competitive advantages. Nascent start-ups are less advanced in the process, and might therefore have less developed resource advantages than young firms. Conversely, a nascent entrepreneur could overestimate its advantages relative to young firms. Nascents were identified if they confirmed they had undertaken some concrete 'start-up behaviour' such as looking for equipment or a location, organizing a start-up team, working on a business plan, etc., within the last 12 months. If not, they were deemed under qualified and excluded from the sample. Conversely, if they confirmed that the firm's revenues had exceeded expenses for six of the last 12 months they were qualified as a young firm.

RESULTS

Table 1 presents the results of the regression analyses for product differentiation, and Table 2 presents the results for cost advantage. Model 1 contains the control variables for product differentiation and model 4 for cost advantage (see Tables 1 and 2). Models 2 and 5 introduce the effect of the various resource advantages on product differentiation and cost advantage respectively (hypotheses 1-5) and models 3 and 6 examine the effects of the inimitability of the key resource advantage and disadvantage on achieving competitive advantage through product differentiation and cost advantage (hypotheses 6-7). The models showed significant increases in explanatory power. Regarding the control variables we can observe that the number of employees ($\beta = -0.157$, $p<0.05$) had a negative effect on achieving cost advantages and developing a service instead of a product ($\beta = -0.154$, $p<0.01$) had a negative effect on achieving competitive advantage by differentiating their offer from competition (see Tables 2 and 3). Model 3 in Table 1 showed that marketing expertise has no significant effect on product differentiation advantage, thereby rejecting hypothesis 1. Model 3 of Table 1 confirmed hypothesis 2 that market knowledge has a positive effect on product differentiation advantage ($\beta = 0.091$, $p<0.01$).

Insert Tables 1 & 2 here

Technical expertise had both a significant positive effect on achieving competitive advantage through product differentiation ($\beta = 0.189$, $p<0.001$) and cost advantage ($\beta = 0.141$, $p<0.01$), thereby confirming hypotheses 3a and 3b. A advantage through using one's network had a significant effect on product differentiation advantage ($\beta = 0.095$, $p<0.05$), thereby confirming hypotheses 4a. We didn't find support for hypotheses 4b, as the effect of networking on cost advantage was non-significant.

The significantly positive effect of flexibility on product differentiation ($\beta = 0.113$, $p<0.01$) and cost advantage ($\beta = 0.273$, $p<0.001$) confirmed hypotheses 5a and 5b. It seems that having a flexible organization is a very strong predictor of obtaining competitive advantage. The inimitability of a firm's key resource advantage had a positive effect on achieving competitive advantage through product differentiation ($\beta = 0.053$, $p<0.05$), but not on achieving a cost advantage. This provides support for hypothesis 5a, but no support for hypothesis 5b. The easier it is to overcome a key resource disadvantage, the higher the relative competitive advantage of a start-up in terms of product differentiation ($\beta = -0.046$, $p<0.05$) and costs ($\beta = -0.075$, $p<0.01$), thereby confirming hypotheses 7a and 7b.

CONCLUSIONS

We conduct a large scale study of start-up firms that investigates resource advantages and their inimitability as determinants of cost and differentiation advantages. The study makes a number of contributions to the growing body of research using the RBV to better understand the phenomena of entrepreneurship.

Our first contribution is to demonstrate the applicability of an "entrepreneurial capability" RBV lens to a broad range of start-ups. The results revealed a start-up firm's entrepreneurial capabilities do have a substantial impact on both its relative cost position and product differentiation. It incorporates a broad range of "entrepreneurial capabilities" including alertness and industry knowledge, flexibility, strong networks and unique marketing and technical expertise

Another contribution is separately investigating the impact of resource advantages on a firm's cost position versus product differentiation. As expected a firm's market-related resource advantages (market knowledge) has an impact on product differentiation, but not cost position. Other resource advantages influence both cost and product differentiation, albeit the effect sizes

are different. Technical expertise has the stronger influence on product differentiation than flexibility and networking ability and market knowledge. In contrast, network ability had the strongest influence on cost position, with technical expertise being the only other significant resource advantage.

A third contribution is provided by the unique empirical setting of the research. This is the first RBV study to include nascent firms, and one of only a handful to investigate very young firms. Moreover, by generating a random sample of both nascent and young firms, the study avoids the survival bias inherent in other studies. Importantly, resource (dis)advantages that influence a nascent firm's ability to get up and running, or a young firm's likelihood of survival, may not be evident in studies affected by survival bias.

A further contribution is to introduce a perceptual measure of the inimitability of a firm's key resource advantage and disadvantage into the empirical RBV literature. In a broad-based sample of firms, which have very different types of resource advantages, assessing inimitability by an objective criteria is very difficult. The results confirmed that the inimitability of both the key resource advantage and disadvantage had an impact on product differentiation. Only the inimitability of disadvantage was found to have an impact on the cost position.

Finally, some limitations of the study warrant comment. First, the study relies on perceptual measures that introduce self-report bias. However, objective measures would be very difficult to collect for a large sample of start-up firms. Second, the study is cross-sectional. This introduces common method bias and does not permit the causality of relationships to be tested. Future work should aim to confirm and further elaborate these kinds of RBV relationships using longitudinal design and/or case studies.

Appendix: Measures and items of independent and dependent variables[a]

Cost leadership (Naldi, 2008)

Purchase prices[b]

Labour costs

Operating costs

Overhead costs

Product differentiation (new scale)

Product or service uniqueness

Superior product or service

Distinctive product or service features

Marketing expertise (Wiklund and Shepherd, 2003).

Expertise in marketing

Innovative marketers

Ability to provide excellent customer service[b]

Market knowledge

Knowledge of the latest industry trends

Knowledge of the latest technological trends

Knowledge of what the leading customers are asking for

Technical expertise (Wiklund and Shepherd, 2003)

Technical expertise

Expertise regarding development of products or services

Competence that is difficult to copy

Network capabilities (Madsen et al., 2006)

Ability to use the firm's networks to influence the firm's environment

Ability to use the firm's networks to access useful knowledge

Ability to use personal networks for business purposes

Flexibility (Naldi, 2008)

Freedom for managers to make and implement fast decisions

Flexibility to react fast to new trends

Inimitability of key resource advantage (new scale)

It would be rather easy for other businesses to copy this advantage[R]

It would take other businesses a long time to copy this advantage

It would be very costly for other businesses to copy this advantage

Other businesses could easily match this advantage, although perhaps in a different way[R]

Overcoming key resource disadvantage (new scale)

It will be rather easy for us to overcome this disadvantage[R]

It will take us a long time to overcome this disadvantage

It will be very costly for us to overcome this disadvantage

It will be fairly easy to work around this disadvantage, although perhaps in a different way[R]

[b] item dropped after factor analyses

[R] reverse-coded item

Table 1: Hierarchical Linear Regression for Product Differentiation

Variable	Model 1	Model 2	Model 3
Constant	3.944 ***	2.009 ***	2.126 ***
Years Venture Active	.000	.001	.001
Amount Invested ($000s)	.003	-.016	-.018
Hours Owners (Hrs / wk)	.001	.000	.000
Number of Employees	.069	.050	.063
Team Dummy	.060	.083	.082
Spouse Team Dummy	-.030	-.016	-.015
Number of Owners	-.009	.005	.007
HomeBus	-.079	-.037	-.033
Services Dummy	-.109	-.149 **	-.154 **
Human Capital: Education	-.066	-.042	-.053
Human Capital: Start-up Experience	.086	.041	.026
Human Capital: Business Experience	.056	-.045	-.045
High Technolgy Dummy	.146 *	.057	.047
Age of Technology (Existance)	.081	.074	.077
Nascent Dummy	.357 ***	.255 ***	.241 ***
Flexibility Advantage		.116 ***	.113 **
Market Knowledge Advantage		.091 **	.091 **
Networking Advantage		.100 **	.095 **
Technical Expertise Advantage		.198 ***	.189 ***
Marketing Expertise Advantage		.035	.031
Robustness of Key Advantage			.053 *
Robustness of Key Disadvantage			-.046 *
R Squared	0.092	0.270	0.279
Change R Squared		0.177	0.009
Change F		36.7 ***	5.0 **

Table 2: Hierarchical Linear Regression for Cost Advantage

Variable	Model 1	Model 2	Model 3
Constant	3.752 ***	1.881 ***	1.916 ***
Years Venture Active	-.003	-.001	.001
Amount Invested ($000s)	.008	-.003	-.002
Hours Owners (Hrs / wk)	.001	.000	.000
Number of Employees	-.165 *	-.178 *	-.157 *
Team Dummy	-.029	-.014	-.016
Spouse Team Dummy	-.104	-.086	-.084
Number of Owners	.003	.019	.021
HomeBus	.091	.119	.107
Services Dummy	-.057	-.084	-.091
Human Capital: Education	-.073	-.038	-.040
Human Capital: Start-up Experience	.071	.026	.020
Human Capital: Business Experience	.059	-.059	-.056
High Technolgy Dummy	.096	.039	.029
Age of Technology (Existance)	-.022	-.026	-.008
Nascent Dummy	.015	-.062	-.090
Flexibility Advantage		.274 ***	.273 ***
Market Knowledge Advantage		-.028	-.033
Networking Advantage		.065	.065
Technical Expertise Advantage		.136 **	.141 **
Marketing Expertise Advantage		.040	.032
Robustness of Key Advantage			.000
Robustness of Key Disadvantage			-.075 **
R Squared	0.021	0.143	0.151
Change R Squared		0.121	0.009
Change F		23.2 ***	4.2 *

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